

**Remarks/Arguments**

The Examiner has rejected applicants' claims 1, 7-11, 17-21, 24-28, 31-37, 39-42, 45-51, 53, 57-58 and 60-61 under 35 USC § 103(a) as being unpatentable based on the Black patent (US 6,307,956 B1) taken with the Yguerabide, et al. patent (US 6,586,193) taken further with either the Schmidt, et al. patent (US Patent No. 7,094,531) or the Lockhart, et al. patent (US patent No. 6,344,316). This rejection is respectfully traversed.

Applicants' independent claim 1 recites a system for issuing an authentication certificate used in personal authentication, comprising: reaction means for reacting a DNA array in which a plurality of DNA probes corresponding to plural kinds of genes are arranged in a predetermined order, with a gene obtained from a given person; issuing means for issuing an authentication certificate for certifying the person; and controlling means for executing a process comprising the steps of: (i) making said reaction means react the DNA array with a gene obtained from the given person to form a hybridization pattern; and (ii) making said issuing means issue an authentication certificate by attaching the reacted DNA array obtained in the step (i) to a base of the authentication certificate. Independent claims 11, 21 and 60 recite issuing an authentication certificate on which a reacted DNA array forming a hybridization pattern is attached.

Likewise, independent claims 25, 37, 39, 51, 57 and 58 recite performing authentication processing using an authentication certificate on which a reacted DNA array forming a hybridization pattern is attached. Independent claim 53 also recites that a reacted DNA array forming a hybridization pattern is attached on an authentication certificate. Finally, independent claim 61 recites issuing an authentication certificate carrying a hybridization pattern formed on a reacted DNA array.

All applicants' above independent claims thus require a reacted DNA array forming a hybridization pattern attached to an authentication certificate. More particularly, the present invention is characterized by issuing an authentication certificate by attaching a reacted DNA array obtained by reacting the DNA array with a gene obtained from the given person to form a hybridization pattern.

The present invention, in issuing an authentication certificate utilizing a DNA hybridization pattern, has advantages of high stability against environment change. The authentication certificate issued by the present invention, in comparison with digital data, magnetic data and the like, is resistant to electric field, magnetic field and temperature change. Such a construction is not taught or suggested by the cited art of record.

Specifically, the Black patent teaches an identity verification system that employs biometric technology for identity verification. According to the Black patent, the identity verification is carried out by:

- 1) registering biometric information of a person to the system;
- 2) matching biometric information obtained from a subject with registered biometric information; and
- 3) verifying the subject based on the matching result.

As the Examiner stated in the Office Action, Black "discloses recording and storing the layout information as either digital or magnetic information." Thus, the Examiner concludes that the Black patent fails to teach or suggest "attaching the reacted DNA array to a base of the authentication certificate."

The Examiner then relies on the Yguerabide, et al. and Schmidt, et al. or Lockhart, et

al. patents and argues these references in conjunction with the Black patent result in applicants' invention. Applicants disagree.

The passage of the Yguerabide, et al., patent cited by the Examiner mentions, in part, the use of particulate labels arrays in diagnostic arrays and also mentions detecting "[m]etal-like particles in microarray and array chip formats . . . ." The passage of the Schmidt, et al., patent cited by the Examiner states, in part, that the patent teaches "a kit for sequencing DNA, which comprises an array of hybridisation probes, each probe comprising a label cleavably attached to a known base sequence of predetermined length, the array containing all possible base sequences of that predetermined length and the base sequences being incapable of litigation to each other." Finally, the passage of the Lockhart, et al. patent cited by the Examiner discloses, in part, a technique in which [a] given reference DNA sample is hybridized/litigated to a generic DNA array" and "[a] set of n electronic tilings are generated and the corresponding basecalls made."

However, from a thorough reading of these patents, it is evident that they teach various methods and procedures for providing kits for use in identifying DNA sequences with a high degree of accuracy. Thus, the patents are concerned with accurate DNA sequence identification and would not teach or suggest use of merely a hybridization pattern for authentication, nor could they possibly teach or suggest attachment of a reacted DNA forming a hybridization pattern to an authentication certificate.

Viewing the Black patent in light of these patents would simply not motivate a skilled artisan to attach a reacted DNA forming a hybridization pattern to an authentication certificate. The combined references at most might result in a system in which identity verification is carried out by:

- 1) registering a DNA sequence of a subject to the system;
- 2) identifying an exact DNA sequence of a subject to match it with the registered DNA sequences; and
- 3) verifying the subject based on the matching result.

To the contrary, the present invention does not require exact DNA sequences, but utilizes hybridization patterns on a DNA array. None of the cited patents teach or suggest utilizing a hybridization pattern on a DNA array for identity verification. Also, the Black patent teaches “recording and storing the layout information as either digital or magnetic information” and thus teaches away from storing a DNA pattern itself, let alone a hybridization pattern on a DNA array.

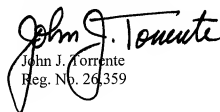
Applicants’ independent claims 1, 11, 21, 25, 37, 39, 51, 53, 57, 58, 60 and 61, and their respective dependent claims, all of which recite such features, thus patentably distinguish over the Black, Yguerabide, et al., Schmidt, et al. and Lockhart, et al. patents.

In view of the above, it is submitted that applicants’ claims, as amended, patentably distinguish over the cited art of record. Accordingly, reconsideration of the claims is respectfully requested.

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Respectfully submitted,

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